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AVIATION LIAISON OFFICERS:  
A MEANS TO ENHANCED COMBAT POWER

AN INDIVIDUAL STUDY PROJECT

by

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# AVIATION LIAISON OFFICERS A MEANS TO ENHANCED COMBAT POWER

## CHAPTER 1

### INTRODUCTION

Students of modern warfare, especially those that have participated in it, understand that Army Aviation's value on the battlefield has always been measured by the extent to which it contribute to the combat effectiveness of the ground combat elements. This sentiment is expressed in the following quotation by Alfred A. Cunningham, the Marine Corps' first aviator.

"The only excuse for aviation in any service is its usefulness in assisting troops on the ground to successfully carry out their operations."<sup>1</sup>

Since it is the ground combat forces' mission to close with and destroy the enemy by means of fire, maneuver, and shock effect, Army Aviation must focus its efforts to support this end.

In Chapter 11, I will discuss how Army Aviation has evolved since June, 1942. Particular attention will be paid to how Army Aviation has broadened its role on the battlefield through technological advances, and how it has interfaced with the ground combat elements. As Field Manual 1-100, Army Aviation In Combat Operations, states:

"On the future battlefield, the control and use of both air and ground elements, to successfully attain decisive results, will be inextricably linked. No one combat force or element can independently succeed on today's battlefield without the total support of the other combined arms members."<sup>2</sup>

Since future battlefields will be characterized by high mobility, as well as tremendous firepower, the Army must be able to respond rapidly to the threat. Although aviation's inherent capabilities of speed, agility, and firepower certainly provide a means of quick response to windows of opportunity, it is also necessary to have a system that provides timely and accurate advice to the ground commander so that the aviation elements can exercise their capabilities as effective members of the combined arms team.

Additionally, a system of ground-aviation interface must be capable of assisting the ground commanders at both the operational and tactical levels with all of their aviation related responsibilities. The most important of these duties are airspace command and control and aviation resource allocation. In Chapter 111, Aviation at the Operational Level, an examination will be made of the system that exists to meet the responsibilities of the operational commanders that plan, execute, and, sustain campaigns and major operations. Since the system at the operational level functions well, but the system at the lower tactical level does not, the focus will be at the brigade and battalion air-ground interface and I will recommend how the Army should



air-ground interface and I will recommend how the Army should change it. To do this, I will examine both the Air Force and Marine Corps systems and extract those aspects that I consider of value to the Army.

## ENDNOTES

1. U. S. Marine Corps, Fleet Marine Field Manual 5-1, p. 1  
(hereafter referred to as "FMFM 5-1").

2. Department of the Army, Field Manual 1-100, p. 1-1  
(hereafter referred to as "FM 1-100").

## THE DEVELOPMENT OF ARMY AVIATION

### CHAPTER 11

#### BACKGROUND

Although the Wright brothers flew the first manned airplane flights that were powered, sustained and controlled in December, 1903, it was not until 1908 that the United States Army ordered and received its first airplane- a Wright Model A military biplane.<sup>1</sup> It was the Italians that were the first to use the airplane in war when they used it for reconnaissance and bombing against the Turks in North Africa during the 1911 Italo-Turkish war. In the following year, the airplane was used in both the Balkan War and the Mexican Revolution.<sup>2</sup> However, it was not until the few years preceding World War I that there developed large scale interest in aviation application to warfare. The Germans led the way by fielding the world's first widely used fighter aircraft in 1915. The Fokker E-1 monoplane was armed with only a machine gun, but it won them command of the air.<sup>3</sup>

With the onset of World War I, the Allies and Germans continued to develop their air power. They fielded improved bomber, fighter, and reconnaissance aircraft and enhanced their capability to perform aerial photography, gun-spotting and other more direct ways of supporting the ground combat elements with

machine gunfire and low-level bombing.<sup>4</sup> These missions began what is known today as close air support (CAS).

During the period following World War I, nations focused on the development of commercial aviation. It was not until Hitler came to power that Germany's combat aviation industry was rekindled and produced the highly effective Messerschmidt series aircraft. In 1939, Germany became the chief exponent of the application of air power in direct support of ground combat forces. Also, they used airborne forces and either parachuted them into combat or landed them in the combat zone by glider. The importance the Germans placed on aviation support of the ground elements was evident by the fact that they organized and equipped the aviation units specifically to facilitate infantry and armor units operations.<sup>5</sup> Aviation officers were used to advise the ground commanders and to provide the close coordination required between the aviation units and the infantry/armor units.

The British and American military leaders, during the years preceding World War II, were focused on the strategic employment of air-power. The British had formed an independent military air arm during World War I and had achieved success in several colonial wars in Asia and Africa by applying the technique of "control without occupation" which involved policing their underdeveloped colonies from the air. Also the British had long been advocates of strategic bombing as the primary use of air power. Although both of these concepts were proven successful,

they discounted the need for close air support of ground combat units.

Since the U. S. Army Air Corps leadership favored the British strategic employment concepts and were also pressing for a separate air service, the Allies entered World War II without doctrine, aircraft or organizations prepared to provide adequate close air support to ground combat units. Although some progress was made toward developing the doctrine, the war ended without the U. S. developing adequate organizations or procedures for performing CAS in synchronization with the other combat arms. However, we did have success at achieving air superiority over the ground forces and in executing devastating strategic bombing in Germany. The close air support system of organization and procedures, as such, was actually developed after the start of the Korean War.

### ARMY AVIATION HISTORY

Although a few airplanes were used during World War I to perform artillery adjustment missions, they were not very successful due to inadequate communication. The aircrews had to use signals or flags to communicate with the artillery and often times, the result was disastrous to friendly troops. However, by 1941, most aircraft had radios and they were able to fly slow enough in the Piper Cub so that they could call effective fire on the enemy. The successful performance of not only the artillery adjustment mission but also the aerial scout, message courier and

command transport missions during the Tennessee Maneuvers in June, 1941, caused the Army to recommend to the War Department that light aircraft be made organic to the field artillery. On 6 June 1942, the War Department approved the request and Army Aviation was born.<sup>6</sup>

Since the aircraft and aviation crewmembers were assigned to the field artillery units, there was a close working relationship which resulted in the artillery commander receiving timely advice on how to employ his aviation assets. Although the artillery spotting mission was given high priority, frequently senior ground commanders tasked the artillery to provide aircraft for scouting, courier and transport requirements. The Piper Cub, nicknamed "the Grasshopper", was suited to these missions because it could take-off and land practically anywhere and fly slow enough to conduct reconnaissance missions.

Army Aviation was first committed to combat in support of the North African invasion on 9 November 1942 when three Piper Cubs took off from the deck of an aircraft carrier. Unfortunately, the first rounds fired at them were from the nearly 200 ships in the Allied invasion fleet. Shortly thereafter, they were fired on by one of the combat divisions because they were mistaken for German aircraft. The absence of coordination and liaison with "friendly" units was undoubtedly responsible.<sup>7</sup>

By 1944, Army Aviation's missions were expanded to include resupply, wire laying, liaison, and medical evacuation. The expanded role of aviation necessitated changes in doctrine as organic aviation assets were provided to the infantry, engineers,

cavalry, and armor.<sup>8</sup> Since they became organic to the other combat branches, the aircraft and aviation personnel were under the direct control of the ground commanders and were responsive to his requirements. It was not necessary to have a system of liaison officers to interface with the other combat arms as would be required later when separate aviation units were organized.

On 6 May 1941, U. S. Army observers watched Igor Sikorsky fly his US-300 helicopter for over ninety-two minutes and were convinced of rotary wing aviation's value on future battlefields. The helicopter's hover capability would obviously allow it to take-off and land in much smaller areas than even the venerable Piper Cub. Its air speed range make it even more suitable for the scouting, artillery adjustment, wirelaying, and medical evacuation missions. Subsequently, in 1947, the Army's helicopter program was started with the purchase of the Bell H-13.<sup>9</sup>

The Korean War saw the first regular use of the helicopter on the battlefield. The Bell H-13s continued to perform the previously mentioned missions, but the medical evacuation role proved to be the most critical. During the war, the helicopter detachments evacuated a total of 21,212 wounded personnel.<sup>10</sup> Since much of the fighting was done in extremely rugged terrain, inaccessible to ground vehicles or airplanes, many veterans owe their life to the H-13 and H-19 helicopters and the Army aviators who flew them.

The Army followed the Air Force's lead by using the helicopter for medical evacuation. The Air Force's Third Air Rescue Squadron (Helicopter), often requested by the Army to

evacuate wounded soldiers from the field, demonstrated just how effectively this mission could be done. Subsequently, the Air Force assisted Army medical and aviation personnel with developing and testing the medical evacuation concept. Since the Naval hospital ships provided the Stokes litters, it can be said that this was truly a joint service action.<sup>11</sup> The successful performance of the medical evacuation mission solidified the requirement for dedicated Army medical evacuation helicopters on the battlefield. Consequently, the medical community began training its own pilots, instead of using combat arms officers, and assigned them to what is now known as the medical service corps.<sup>12</sup> This concept is still in practice today.

The Sikorsky H-19 which could transport twelve soldiers, not only enhanced the medical evacuation mission, but made it possible to significantly increase the amount of supplies and equipment moved by helicopters on the battlefield. Also, it became a more feasible means of transporting soldiers. Even with aviation's expanded role, the fact that aviation units were organic to the other branches and due to the simplicity of the missions, an extensive liaison system for interfacing was not required.

It was during the Korean War that the Air Force began developing the tactical air control party concept which included the use of forward air controllers (FACs). The system was required to synchronize the Air Force's firepower with the ground commander's scheme of maneuver to achieve maximum combat power. The Army Aviation community was still quite small, less than two hundred aircraft, so it was not necessary to have a



separate system to interface with the Air Force because the tactical air control parties were able to coordinate Army Aviation's requirements satisfactorily. This would change during the next war when again, Army Aviation's role on the battlefield would be expanded.

During the late 1950's, a new concept was being developed at Fort Rucker, Alabama, that would revolutionize the use of the helicopter in combat. The concept envisioned the use of armed helicopters. Over the objections of the Air Force, the aviation center developed a way to mount aerial machine guns and rockets on the H-13. They formed and tested the Aerial Combat Reconnaissance Platoon and later the Aerial Combat Reconnaissance Company; and, developed the tactics and techniques of employment.<sup>13</sup>

In the early 1960s, two other events occurred that impacted on the future of Army Aviation. Lieutenant General Gordon B. Rogers chaired a board that was tasked to recommend actions required to meet Army Aviation requirements through the decade of the 60's. The key recommendations by the Rogers Board were that the Army should:

- 1) Push development of the UH-1 (Huey).
- 2) Procure the CH-47 (Chinook).
- 3) Study the feasibility of airmobile units.<sup>14</sup>

In accordance with the Rogers Board's recommendation, in 1962, Secretary of Defense Robert McNamara directed a study of the tactical mobility of the Army's ground forces with focus on airmobility.<sup>15</sup> General Hamilton Howze was tasked to chair the airmobility board. The key recommendations from the Howze Board were:

- 1) "That Army aircraft could provide the airmobile assets necessary to enhance the ground forces combat effectiveness.
- 2) That a Cavalry Combat Brigade should be created and used as a means to fight "brushfire wars".
- 3) That the 11th Air Assault Division be formed at Fort Benning to undergo test evaluations."<sup>16</sup>

Consequently, the airmobile concept was developed, validated and applied shortly thereafter in combat in Vietnam.

Several technological advances were made to support our airmobile doctrine. First, the UH-1 was developed and modifications made to accommodate combat troop transport, medical evacuation, aerial gunship close air support, logistical resupply, and command and control missions. Second, the CH-47 was specifically designed to expand our capability for troop transport and resupply. Some Chinooks were even pressed into service as gunships (called Guns-A-Go-Go). The CH-54 (Skycrane) also enhanced our capability to move large quantities of supplies and heavy equipment. The AH-1 (Cobra) was fielded in the

Republic of Vietnam as the first helicopter specifically designed as a gunship to provide close air support to ground combat units. The OH-6 and OH-58 scout helicopters were fielded to perform primarily the reconnaissance missions. All of these aircraft provided the airpower and mobility required to make our airmobile doctrine effective.

Army Aviation's capability to gather intelligence was greatly enhanced when the OV-1 Mohawk was fielded and joined the O-1 Bird Dog as the eyes of the ground commander. Additionally, they called artillery fire missions and coordinated Air Force close air support and B-52 bomber missions.<sup>17</sup>

With the tremendous expansion of Army Aviation's role on the battlefield came the necessity to establish a closer relationship with the other branches, particularly infantry and armor. Separate aviation units, such as the 1st Aviation Brigade with over 4,000 aircraft, provided the preponderance of aviation support. Consequently, there was a need for close coordination and liaison between ground and air units to ensure that aviation supported the ground commander's scheme of maneuver. In most cases, the aviation unit received a mission request sheet that stated how many aircraft of what types were needed to perform a specific mission (air assault, logistical, resupply, reconnaissance; etc.) and the location of the pickup zone and landing zone. Both the ground and air units made the most of this situation and got the mission done, but our experience indicates that aviation should be involved when the ground commander begins to develop his tactical plan, not when he is about to execute it. Some aviation

units, were able to establish a close interface with the ground units they habitually supported; however, this was the exception. Often times, the fast moving pace of combat actions did not allow ground units to plan operations very far in advance. Consequently, since the aviation units were unable to have a liaison officer continuously with the ground unit, the aviation elements had little input, if any, on the ground tactical plan. Most often, the aviation unit would be notified of the mission late the day prior to execution and would only have sufficient time to develop the air movement plan based upon the ground plan and without the benefit of a reconnaissance. In all likelihood, if an aviation liaison officer would have been present as the ground tactical plan was being developed, he could have advised the ground commander of the best way to employ the aircraft to achieve maximum combat effectiveness. Although Aviation was responsive to the ground commander, it was recognized that effectiveness and efficiency could have been improved with a better air-ground interface system.

Since the end of the Vietnam War, Army Aviation has continued to evolve. The fielding of the AH-64 (Apache) attack helicopter, the OH-58D (AHIP) scout, the CH-47D (Chinook) medium lift helicopter have all enhanced the capability to perform the Army Aviation missions. Additionally, we have reorganized our aviation units and provided both the division and corps commanders with a consolidated organic aviation brigade. Consequently, Army Aviation has become a potent combat force

that must be properly employed for maximum combat power .  
Air-ground interface is critical to achievement of this goal.

In the next chapter, the implications of aviation warfare at the operational level and the system that exists to assist the warfighters with their aviation command and control responsibilities, will be addressed.

## ENDNOTES

1. "History of Aviation, Collier's Encyclopedia, 1986, Vol. 3, p. 378.
2. Ibid., p. 379.
3. Ibid.
4. Ibid.
5. Ibid., pp. 381-382.
6. MG Ellis D. Parker and Herbert P. LePore, "History, Heraldry and Spirit of United States Army Aviation," 1987, pp.7-8.
7. Ibid., p. 8.
8. Ibid., p. 12.
9. Ibid., p. 13.
10. Ibid., pp. 14-15.
11. Ibid.
12. Ibid.
13. Ibid., pp. 17-18.
14. Ibid., p. 20.
15. Ibid.
16. Ibid.

## ENDNOTES (CONT.)

17. Ibid., p. 22.

## AIR WARFARE AT THE OPERATIONAL LEVEL

### CHAPTER III

At the strategic level of war, leaders are concerned about the application of the elements of national power: political, economic, socio-psychological, and military. They strive to apply these elements in a manner that is most likely to achieve strategic objectives. However, at the operational level of war, the principle focus is the application of the military element of power. The commander organizes his forces for the conduct of campaigns that are designed to achieve strategic objectives. Since campaigns are joint and often combined operations, they place major responsibilities on the operational level commander for the planning, coordination, and execution of operational maneuver and fires as well as sustainment. The command is likely to have a diverse composition such as a ground, air, naval, special operations, and combat service support units. This chapter will focus on the commander's responsibilities for command and control of his aviation assets and the current system for meeting those responsibilities at the operational level of war.

### BACKGROUND

The following quotation from U. S. Army Field Manual (FM) 100-5, Operations, best explains the importance of the air dimension and the commander's role in its application.



"The airspace of a theater is as important a dimension of ground operations as the terrain itself. This airspace is used for various purposes including maneuver, delivery of fires, reconnaissance and surveillance, transportation, and command and control. The control and use of the air will always affect operations; the effectiveness of air operations in fact can decide the outcome of campaigns and battles. Commanders must consider airspace to include the apportionment of air power in planning and supporting their operations. They must protect their own forces from observation, attack, and interdiction by the enemy and expect the enemy to contest use of the airspace."<sup>1</sup>

FM 100-5 explains that the dynamics of combat power (the ability to fight) decides the outcome of campaigns, major operations and battles because it measures the impact created by combining maneuver, firepower and protection with leadership.<sup>2</sup> When we consider the firepower available from current high performance Air Force, Navy, Marine and allied air forces aircraft, it is easy to recognize that air warfare provides tremendous lethality. Furthermore, when we consider the high technology Army Aviation aircraft and current Air Land Battle doctrine of employment, it is evident that maneuver protection of the ground forces, and firepower are greatly enhanced by Army Aviation. Additionally, aviation makes major contributions to the execution of Air Land battle doctrine by adding strength and flexibility to the implementation of the Air Land battle tenets of initiative, agility,

depth, and synchronization. However, in order to achieve integrated battle plan execution, the ground and air operations must support the scheme of maneuver and be fully integrated and coordinated.

The operational level commander has consistently used the commander of his air force assets as his primary adviser and supervisor of his aviation responsibilities. However, as related in Chapter II, the expanding role of aviation on the battlefield dictates the need for an extensive system of aviation advisors and managers at the operational and tactical levels that can provide timely advice to the warfighters, implement command guidance, manage the aviation support allocation system and coordinate the utilization of airspace by field artillery, air defense artillery, as well as all aviation elements.

Early in World War II, before the allied air forces developed the doctrine, organizations, and tactics for close air support, we learned bitter and disastrous lessons. On many occasions the Allied Air Force dropped ordinance on our units which resulted in the death or wounding of large numbers of friendly troops and the destruction of combat equipment. An account by Lieutenant General William H. Harrison, Jr., then a Brigadier General and Deputy Commander of the 30th Infantry Division, which explains what happened to his unit during the start of Operation COBRA. This operation was the breakout at St. Lo following the Allied Forces invasion of Europe at Normandy, France in June, 1944.

General Omar Bradley's Operation COBRA plans called for the most intensive bombing ever undertaken. Between 2,500 and

3,000 planes were to take part in a saturation bombing of a target area about 3 1/2 miles wide and 1 1/2 miles deep. Following the bombing, the 9th and 30th divisions were to attack and mop up the enemy. The Allied Air Force units participating were not available for training, due to priority strategic bombing missions against Germany, until after Bradley's ground forces were in final preparation for the cross-channel invasion. The absence of joint training combined with the fact that the Allied Air Force had not developed a forward observer and controller system, made General Harrison very concerned. He believed the plan "assumed too much infallibility on the part of the pilots and bombardiers"<sup>3</sup> His concerns proved to be well founded when on 24 July, the P-47 and B-29 bombers mistakenly bombed 30th Division soldiers' positions. In one company alone, thirty soldiers were killed, numerous wounded and much equipment destroyed.<sup>4</sup> Ernie Pyle wrote of this incident which he observed first hand:

- "we were horrified by the suspicion that those machines, high in the sky and com-pletely detached from us, were aiming their bombs at the smokeline on the ground which was drifting back over us! -an indescribable kind of panic comes over you at such times. We - felt trapped and completely helpless.<sup>5</sup>

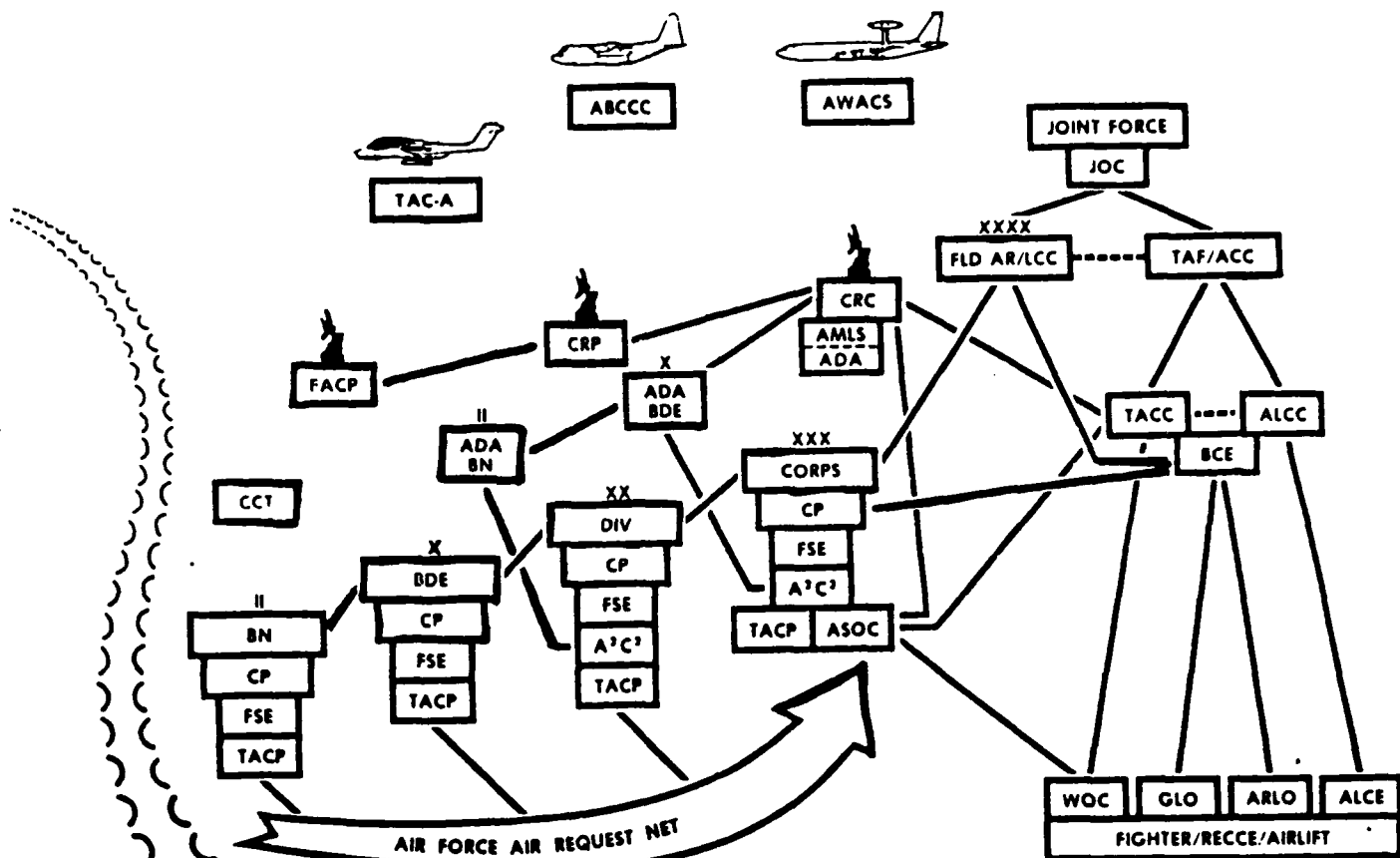
British Air Chief Marshall Sir Trafford Leigh-Mallory gave assurance that the tragic mistake would not occur again, but on 25 July, the P-47s and B-29s did exactly the same thing, with even worse consequences. Harrison related that his division

commander, Major General Hobbs, always asked for no air support because his units were hit so often, but the decision was always reversed by his seniors.<sup>6</sup>

### THE INTEGRATED AIRSPACE CONTROL SYSTEM

Such tragic results during our early attempts to execute close air support promoted the development of a comprehensive system at the operation level that has, for the most part, proven to be successful at executing the commander's aviation responsibilities. The current system is established in Department of Army, Field Manual (FM) 100-103, Army Airspace Command and Control in a Combat Zone. As Figure #1 on page 23 shows, FM 100-103 establishes the system of management from the Theater Army through the maneuver battalion. It includes air defense artillery command and control elements, fire support coordination elements, army air traffic services facilities, and airspace control liaison personnel who are located at airspace control facilities.<sup>7</sup>

# TACTICAL AIR CONTROL/ARMY AIR GROUND SYSTEM<sup>8</sup>



## TAC/AAGS ACRONYMS

AAGS  
ABCCC  
A3C3  
ACC  
ADA  
ADA BDE  
ADA BN  
AI  
ALCC  
ALCE  
ALO  
AMLS  
ARLO  
ASOC  
AWACS  
BAI  
BCE  
BDE  
BN  
CAS  
CCT  
CP  
CRC  
CRP  
DIV  
EC  
FAC  
FACP  
FLD AR  
FSCORD  
FSE  
FSO  
GLO  
JP  
JOC  
LCC  
RECCE  
TAC-A  
TACC  
TACP  
TACS  
TAF  
TAM  
WOC

Army Air Ground System  
Airborne Battlefield Command and Control Center  
Army Airspace Command and Control  
Air Component Commander  
Air Defense Artillery  
Air Defense Artillery Brigade  
Air Defense Artillery Battalion  
Air Interdiction  
Airlift Control Center  
Airlift Control Element  
Air Liaison Officer  
Airspace Management Liaison Section  
Air Reconnaissance Liaison Officer  
Air Support Operations Center  
Airborne Warning and Control System  
Battlefield Air Interdiction  
Battlefield Coordination Element  
Brigade  
Battalion  
Close Air Support  
Combat Control Team  
Command Post  
Control and Reporting Center  
Control and Reporting Post  
Division  
Electronic Combat  
Forward Air Controller  
Forward Air Control Post  
Field Army  
Fire Support Coordinator  
Fire Support Element  
Fire Support Officer  
Ground Liaison Officer  
Joint Force  
Joint Operations Center  
Land Component Commander  
Reconnaissance  
Tactical Air Coordinator-Airborne  
Tactical Air Control Center  
Tactical Air Control Party  
Tactical Air Control System  
Tactical Air Force  
Tactical Air Reconnaissance  
Wing Operations Center

Figure 3-1

The land component commander (LCC) assigns missions to subordinate commanders and determines priority for airspace use. Army Airspace Command and Control (A<sup>2</sup>C<sup>2</sup>) allows him to fully synchronize his aviation assets and air maneuver to contribute decisively to the outcome of the battle.<sup>9</sup> FM 100-103 was developed in harmony with the Air Force tactical air control system (TACS) and functions in concert with the Navy and Marine Corps airspace control systems.

The Joint Force Commander (JFC) usually assigns his air component commander as the airspace control authority (ACA) who will recommend policy and procedures for the employment of airspace control operation and coordination requirements for units operating in the area. At this level and below, the airspace control elements will have four basic functional activities--command and control, air defense, some aspects of fire support coordination, and air traffic control. The system is designed to expedite tactical mission accomplishment, ensure air defense and ground-based fire support systems have maximum freedom to engage the enemy (consistent with safe air operations), and to provide air traffic regulation and identification within the area of operations. The Tactical Air Control Center (TACC) is the senior air operations element of the system and is co-located with the land component commander's (LCC) Battlefield Coordination Element (BCE) which processes requests for tactical air support, monitors and interprets the land battle situation for the TACC, provides intelligence and operational data, and coordinates air defense and

airspace control matters.<sup>10</sup> Airspace management liaison sections (AMLS) are established throughout the airspace control system and are manned by Army personnel with representatives from other components involved to include Allied representation. The AMLS coordinates the operational commander's airspace requirements and requests for establishment of special use airspace.<sup>11</sup>

Other liaison personnel are positioned with key facilities of the airspace control authority and other services with the joint environment. They are:

- 1) The Air Defense Liaison Officer and the A<sup>2</sup>C<sup>2</sup> Liaison Officer who are located at the Air Space Control Center of the TACC.
- 2) The Ground Liaison Officers (GLO) and Air Reconnaissance Liaison Officers (ARLO) who are located at the various tactical air force wings and are Army personnel from the BCE.
- 3) A<sup>2</sup>C<sup>2</sup> liaison personnel may be positioned with the Marine Air-Ground Task Force (MAGTF) at the Direct Air Support Center (DASC) or with the Navy at their Theater Air Control Center (TACC).<sup>12</sup>

Although there are other sub-elements in the airspace command and control system, it suffices to say they function to facilitate positive control of all airspace users which our experience in World War I, Korea, and Vietnam proved was absolutely critical to combat effectiveness. It is the senior operational level

commander that must ensure the system functions properly. Without such a system to control all indirect fire weapons, air defense systems, and aircraft, there would be absolute chaos which would result in greatly reduced combat power, or worse yet-- fratricide.

The division commander, usually considered to be the senior warfighter at the tactical level of war, has a dedicated airspace command and control element that is designed to accomplish the same tasks as were required of the operational level commander and mirrors the corps system except that the division does not have an air support operations center (ASOC). The A<sup>2</sup>C<sup>2</sup> element which is co-located with the fire support element and the tactical air control party (TACP) accomplishes those functions under the supervision of the G-3 Air. The TACP is provided by the air component commander's tactical air control center and is a key link in the system that coordinates Army and Air Force mission support and airspace control requirements.

### GRENADA EXPERIENCE

The integrated airspace control system is certainly a complex organization, but in a peacetime training environment with time for extensive coordination and planning, the system functions well. Unfortunately, we cannot judge whether it can satisfactorily respond to emergency situations, such as Grenada, that require rapid deployment of ground and air units to combat in areas where extensive contingency plans have not been prepared.



After reviewing the then Chief of Staff, General John A. Wickham's report "U. S. Army Lessons Learned from 1983 Operation Urgent Fury" one can draw some key conclusions relevant to air operations that are applicable to both the operational and tactical level warfighters. Specifically, issue number 9, Army Airspace Management and Air Traffic Control states:

"Discussion: FM's 100-28, 100-42, 1-103 are doctrinal publications which form the basis for managing airspace within those (Grenada) organizations.

Recommendation: That organizations constitute an Airspace Management Element (AME) with the responsibilities and authority outlined in FM's 1-103, 100-28, 100-42, and appropriate field standing operational procedures."<sup>13</sup>

It is apparent that several organizations failed to allocate the personnel resources necessary to form an AME that could execute the responsibilities required by our doctrine.

The previously referenced documents also address the issue of joint airspace management and air traffic control.

"Discussion: (paragraph \*6)<sup>14</sup> If coordinated airspace control and management procedures are followed in the planning phase, practiced during exercises, and disseminated for execution to all relevant commands during operations, then joint airspace management and air traffic control should not create problems during contingency mission execution.

Recommendation: That units follow established procedures for joint operations and train accordingly."15

Implicit in this issue is the need for all participants in the management of joint airspace, from both the operational and tactical levels of war, to adhere to established procedures during training and actual mission execution. It adds credence to the adage - "train as you must fight."16

### CONCLUSIONS

The operational level commander's responsibilities for aviation command and control are extremely vast and complex. However, in order to achieve the greatest combat power on the battlefield, these responsibilities must be met. Only then can he achieve the proper utilization of his aviation assets in concert with the ground forces scheme of maneuver as is required by our Air Land battle doctrine. The system is in place, but as is always true, the commander must ensure that it is properly staffed and trained to perform its required tasks in combat.

Next, let's examine the Army, Air Force, and Marine systems of aviation-ground interface that exist at the brigade and battalion level. The positive and negative aspects of each system and proposes changes to the Army system will be identified.

## ENDNOTES

1. Department of the Army, Field Manual 100-5, p. 4 (hereafter referred to as "FM 100-5")

2. Ibid., p. 11.

3. S. Bruce Lockerbie, A Man Under Orders: Lt. General William K. Harrison, Jr., p. 90.

4. Ibid., p. 91.

5. Ibid., pp. 91-93.

6. Ibid.

7. U. S. Department of the Army, Field Manual 100-103, p. 1-1. (hereafter referred to as "FM 100-103").

8. U. S. Department of the Army, Field Manual 100-26, p. 21, (hereafter referred to as "FM 100-26").

9. FM 100-103, p. 11-4.

10. Ibid., pp. 1-10 thru 1-12.

11. Ibid., p. 1-12.

12. U. S. Air Force, Air Ground Operations School, "Army Airspace Command and Control"-Lesson Plan, pp. 1-4.

13. Ibid.

## ENDNOTES (CONT.)

14. Department of the Army, U. S. Army Lessons Learned from 1983 Operation Urgent Fury, p. 15. (hereafter referred to as "Lessons Learned from Urgent Fury").

15. Note: Paragraphs 1 thru 5 are classified.

16. Lessons Learned from Urgent Fury, p. 16.

17. Note: The Joint Use Lessons Learned System (JULLS) contains over two hundred lessons learned on Operation Urgent Fury; however, many are classified.

## AIR FORCE AIR-GROUND INTEGRATION AT THE LOWER TACTICAL LEVELS

### CHAPTER IV

The close integration of the Tactical Air Control/Army Air Ground System that was evident at the operational level of war continues down through the brigade and battalion. However, where the operational level commanders were most concerned about resource allocation and airspace command and control, at the lower tactical levels, commanders are most concerned about achieving synchronized employment of all means of ground and air power at the time and location that will support the mission. Consequently, at the brigade and battalion levels, timely and accurate advice is even more critical to battlefield success.

This chapter will focus on the system that the Air Force uses to interface with the Army at the brigade and battalion level. I will address: the air-ground interface system, the missions assigned to their liaison officers, the selection criteria for liaison officers, problems with the system, and conclusions on how well the system functions.

### AIR-GROUND INTERFACE SYSTEM

At the brigade and battalion level, the Air Force provides a tactical air control party (TACP) for interface. A January 1987

memorandum of agreement between the Army and the Air Force provides guidance for the assignment, duties and support of the TACP personnel. Also, it covers ground liaison officers (GLO) and air reconnaissance liaison officers (ARLO) which will be addressed in the chapter on the Army. The signatories on the memo are the United States Army Forces Command, Training and Doctrine Command, Air Force Tactical Air Command and Intelligence and Security Command.<sup>1</sup> The objective of the agreement is to increase the capabilities of the United States Army and Air Force in combat and training operations.<sup>2</sup>

The organic brigade/battalion are authorized the following TACP personnel: <sup>3</sup>

Brigade

1 Air Liaison Officer	Major
1 Fighter Liaison Officer	Captain
*1 Tactical Air Liaison Officer (MAC)	Captain
3 Tactical Air Command and Control Specialists	TSgt / Sgt / AIC

Battalion

*1 Air Liaison Officer	CPT / LT
2 Tactical Air Command and Control Specialists	SSG / Sgt

\*Not stationed at the Army installation but provided for exercises, contingencies, and evaluations.<sup>4</sup>

Independent or separate brigades are authorized a reconnaissance liaison officer and additional enlisted personnel. All TACPs are authorized the ground transportation and communications equipment necessary to request and control air support. However, if a special vehicle is required to facilitate mobility or survivability such as an armored personnel carrier, the Army will provide it. FAC aircraft are provided by the Air Forces tactical air support squadron.

### MISSIONS

The primary missions and functions performed by the TACP are:

1. Advise the ground commander on the capabilities and use of the tactical air power, which includes tactical airlift, air reconnaissance, close air support and interdiction.
2. Assist the ground force commander in planning for tactical air support of ground operations.
3. Control tactical aircraft responding to Army requests for close air support.
4. Provide the expertise and effect coordination required to insure detailed integration of close air support operations with the fire and movement of ground operations.
5. Coordinate for USAF aircraft to be employed for tactical airlift and reconnaissance.

## SELECTION CRITERIA

The Air Force does not have a specific set of criterion by which to select officers to serve as either an aviation liaison officer or a forward air controller other than they ensure the pilot successfully completed his advanced aircraft training following flight school.<sup>6</sup> Officer personnel managers consider the availability of aviators for reassignment as the primary factor. Additionally, the normal personnel management considerations such as rank required, overseas tour equitability location, and officer preferences are applied. However, for reasons I will address later, aviation liaison officer and forward air controller positions are not frequently requested by Air Force pilots.

## TRAINING

Officers selected for duty as an air liaison officer (ALO) will not be required to receive additional flight training. However, if they have not already attended the Battle Staff Course at the Air Ground Operations School (AGOS), Hurlbert Field, Florida, they will be sent there enroute to the ALO assignment. The Battle Staff Course provides them with a fundamental understanding of tactical battle management functions within the Tactical Air Control System and Army Air Ground System (TACS/AAGS), and the principles of exploiting Air Force and Army capabilities in the airland battle.<sup>7</sup>



Officers selected for duty as a forward air controller will receive additional flight training at the Replacement Training Unit (RTU) on the particular aircraft they will be required to fly at their duty station.<sup>8</sup>

Additionally, FACs will attend both the Battle Staff Course and the Joint Firepower Control Course (JFCC). The JFCC provides training in the jointly approved procedures and techniques used to plan, request, coordinate, and control joint firepower. Emphasis is placed on operation at the division level and below.<sup>9</sup>

Upon arrival at their unit, all Air Force TACP personnel in the division will receive additional instruction that is tailored to meet unit needs and missions. The Air Liaison Officer Briefing Program is a twelve lesson series on the capabilities of tactical air.<sup>10</sup> Training Circular 90-7 recommends including instruction on the following subjects:<sup>11</sup>

1. TACS/AAGS
2. CAS aircraft and weapons capabilities.
3. Enemy surface-to-air capabilities.
4. Army fire support system and weapon capabilities.
5. Communications procedure.
6. Attack procedure.
7. Suppression of enemy air defense procedures.
8. Integration of Army fire support with CAS.

The division aviation liaison officer is responsible for providing this unit training.

## PROBLEMS

One problem that appears to exist is the lack of enthusiasm on the part of air force pilots for duty as an ALO or as a FAC. The primary objections to ALO duty are: 1) not able to continue flying duties, and 2) the requirement to work in the field environment.

LTC Daniel Leaf, U. S. Air Force, in a recent issue of military review, cited a comment from Major James A. Dunn's article "So Your Going To Work For The Army" that seems to give the Army perception of the Air Force ALOs..

"...the Air Force's reputation among the Army is one of lazy, over-paid wimps who cannot hack peacetime field exercises.- they are perceived as being less than the cream of the crop and, in fact, there are many ALOs who have been passed over for promotion."<sup>1 2</sup>

Whether the perceptions of either the Air Force or Army officers are valid or not, they need to be addressed by the Air Force leadership. They must provide the ALO with some tangible career benefits if they want to send quality officers to these assignments where they will be unable to fly. Since ALO duty broadens their understanding standing of Army operations, selection for advanced schooling, promotion, and more desirable assignments might provide incentive. Although FACs continue to fly, they must sacrifice flying their advanced aircraft, which nearly all prefer, over the aircraft they fly as a FAC. The Air Force

is considering new, high performance aircraft for their FACs that will be both more capable and more survivable.

From the standpoint of Army support, the most significant problem is the availability of an ALO/FAC at the battalion level during peacetime and emergency deployments to combat. The Army-Air Force memorandum of agreement referenced earlier states that the battalion ALO/FAC "during peacetime will be permanently assigned to tactical Air Support Squadrons to facilitate air crew training,- 13 These ALO/FACs will be available to train with their aligned Army unit:

1. Up to six times per year for a total normally not to exceed forty-five days.
2. TDY support in excess of forty-five days must be mutually agreed upon by the wing director and the supported unit commander.
3. Supported unit will notify the Air Force ninety days prior to required reporting date."14

Army commanders should be concerned about the provisions of regulations for the ALO/FACs for several reasons. First, it is doubtful that the ALO/FAC will be available to advise the commander and staff during the planning process of major exercises and training events under the above constraints. The actual exercise dates are known well in advance but the daily planning requirements are continuous. Second, if the ALO only spends forty-five days per year with the battalion, he will not

have a good understanding of the standard operating procedures and the unique aspects of the unit. Next, in a rapid deployment scenario, either an unannounced exercise or a combat deployment, it is very likely that the ALO will not make the movement. A review of battalion emergency deployment readiness exercises and Grenada lessons learned substantiates this contention.<sup>15</sup> Lastly, since there is frequently a shortage of pilots in the Air Force, it can be assumed that priority will be given to putting pilots in cockpits and not in liaison positions, particularly at the battalion level.

### CONCLUSIONS

The integration of airpower and ground based firepower is critical to the implementation of Air Land battle doctrine and ultimately, success on the battlefield. Therefore it is essential that the Air Force select high quality officers to serve in the tactical air control parties, particularly at the lower tactical level of war. Those selected must be well trained and equipped, highly motivated, and responsive to the requirements of the ground commander if maximum effectiveness is to be achieved.

## ENDNOTES

1. The Memorandum of Agreement is signed by - Major General William A. Roosma, Deputy Chief of Staff-Operations, Forces Command, United States Army; Major General Wilson A. Shoffner, Deputy Chief of Staff for Operations, Training and Doctrine Command, United States Army; Major General Richard J. Trzaskoma, Deputy Chief of Staff, Plans, Military Airlift Command, United States Air Force; Major General Charles A. Horner, Deputy Chief of Staff, Plans, Tactical Air Command, United States Air Force; and Colonel Floyd L. Runyon, Chief of Staff, Intelligence and Security Command, United States Army; p. i-ii. (hereafter referred to as "Army-Air Force Memo of Agreement - ALO, GLO, ARLO").

2. Ibid. p. 1.

3. Ibid. p. 6.

4. Ibid. p. 7.

5. Ibid. p. 8.

6. Interview with Peter W. Tkacs, LTC, U. S. Army War College, Carlisle, PA., 25 March 1989. (Former Forward Air Controller and Aviation Liaison Officer).

7. U. S. Air Forces, Air Ground Operations School (AGOS), Missions and Functions Manual, 1988, pp. 10-13.

8. LTC Tkacs interview.

## ENDNOTES (CONT.)

9. AGOS Missions and Functions Manual, pp. 18-21.
10. U. S. Department of the Army, Training Circular 90-7, pp. 31-32 (hereafter referred to as "TC 90-7")
11. Ibid.
12. LTC Daniel P. Leaf, "The Future of Close Air Support, "Military Review", March 19989, p. 11.
13. Army Air Force Memo of Agreement - ALO, GLO, ARLO, p. 5.
14. Ibid.
15. Lessons Learned from Urgent Fury, p. 17.

## MARINE CORPS AIR-GROUND INTEGRATION AT THE LOWER TACTICAL LEVELS

### CHAPTER V

"The capability to conduct successful tactical air operations is essential to the execution of an amphibious operation. To this end, the Marine Corps has pioneered an effective aviation combat arm capable of meeting all the requirements of a landing force. These requirements call for a flexible, responsive aviation combat element specifically tailored to meet the anticipated tactical situation. When combined with the ground combat element, the result is a balanced, self-sufficient, cohesive organization composed of air and ground arms and known as the Marine air-ground team."<sup>1</sup>

The above introduction to Fleet Marine Field Manual 5-1, "Marine Aviation", contains the intent and purpose of Marine Aviation. The nature of their mission and the circumstances under which they must execute it dictate the need for organizing as a combined arms team commensurate with the requirements dictated by the size of the ground combat Marine element. This is to say that when a Marine infantry battalion deploys for training or combat, it takes its complete slice of artillery, aviation, engineer and combat support elements.

In this chapter, I will examine the Marine air-ground system of interface and draw some conclusions on how well it works.

## AIR-GROUND INTERFACE SYSTEM

Before we examine the Marine Corps' system, it is necessary to clarify a held misconception among Army aviators. Many incorrectly believe that the Navy's Air and Naval Gunfire Liaison Company (ANGLICO) provides the Marine ground element's interface with all aviation assets and naval gunfire. In actuality, an ANGLICO is organized to support an Army or allied infantry division of three brigades. It will coordinate and control naval gunfire, naval aviation assets, and the combined arms of the Marine air-ground task force that is with the Army or allied forces.<sup>2</sup>

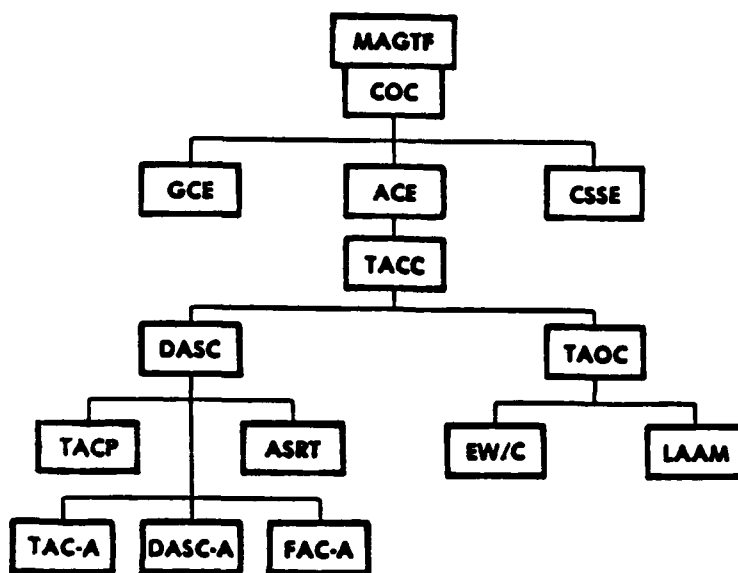
The Marine Air Command and Control System (MACCS) is the agency that plans, coordinates and controls all tactical air operations. Figure #2 (page 43) depicts its organization. MACCS performs the same missions as the TAC/AAGS system and interface with it when working with Army units.<sup>3</sup> The Marine Tactical Air Command Center (TACC) is comparable to the Air Forces Tactical Air Control Center. Also, the Marine's Direct Air Control Center (DACC) and the Marine's Direct Air Support Center (DASC) perform similar functions to the Air Force Air Support Operations Center (ASOC) and the Army Airspace Command and Control (A<sup>2</sup>C<sup>2</sup>) element.<sup>4</sup>

There are thirteen Tactical Air Control Parties (TACP) organic to a Marine division. They perform the same duties as the Air Force TACPs. One is located at the division headquarters; one at



each of three infantry regiments; and one at each of nine infantry battalions.<sup>5</sup>

## MARINE AIR COMMAND AND CONTROL SYSTEM AGENCIES<sup>6</sup>



### ACRONYM

ACE  
ASRT  
COC  
CSSE  
DASC  
DASC-A  
EW/C  
FAC-A  
GCE  
LAAM  
MAGTF  
TAC-A  
TACC  
TACP  
TAOC

### AGENCY

Air Combat Element.  
Air Support Radar Team.  
Combat Operations Team.  
Combat Service Support Element.  
Direct Air Support Center.  
Direct Air Support Center - Airborne.  
Early Warning and Control.  
Forward Air Controller - Airborne.  
Ground Combat Element.  
Light Anti-Aircraft Missile.  
Marine Air Ground Task Force.  
Tactical Air Coordinator - Airborne.  
Tactical Air Command Center.  
Tactical Air Control Party.  
Tactical Air Operations Center.

Marine Air Command and Control System Acronyms.

FIGURE 5-1

There are two types of TACPs -- those at the division and regimental headquarters, and those at the battalion. The difference between the two is that the battalion TACP has two FAC parties, but the regiment and division TACPs have none. Each TACP is led by the air officer (AO) who performs similar duties to the Air Force ALO. Each FAC party has one FAC and four enlisted field radio operators.<sup>7</sup> One FAC will be rotary wing qualified and the other will be fixed wing qualified. The AO can be qualified in either rotary or fixed wing aircraft.

The following are extracts of the table of organization for the Infantry Regiment Fleet Marine Force and Infantry Battalion Fleet Marine Force:

#### REGIMENT<sup>8</sup>

##### S-3 Section

Air Officer (1)

Major

##### TACP Section

Field Radio Operator (1)

Corporal

#### BATTALION 9

##### S-3 Section

Asst. S-3/ Air Officer (1)

Captain

Asst S-3/FAC (2)

Lieutenant

##### Air Liaison Party

Field Radio Operator (1)

Corporal

Field Radio Operator (1)

Lance CPL

Field Radio Operator /Driver (2)

Private

Forward Air Control Party

Field Radio Operator (1)	Corporal
Field Radio Operator (2)	Lance CPL
Field Radio Operator (1)	Private

The authorized rank for the air officers are:

Division	Colonel
Regiment	Major
Battalion	Captain

The number of personnel, their ranks and qualifications, reflect the importance the Marine Corps places on air-ground operations. Additionally, since all personnel assigned to Marine Air Command and Control System duty positions are authorized on the ground element's table of organization, the Marine Corps is making a statement that the purpose of the system is to support the ground commanders.

MISSION

The primary missions and functions of the TACP are similar to those previously discussed in Chapter IV. In summary, they are to advise the ground commander and request, coordinate, and control air operations.

## SELECTION CRITERIA

Before an officer can be selected to serve either as an air officer at any level or a forward air controller, he must have served a flight utilization tour following flight school and have completed an advanced aircraft qualification course. The utilization tour is usually not less than two years. Normally, the Marine Air Wing Commander, a major general, selects those who will serve in the AO and FAC assignments. An officer must have served a successful one year tour as a FAC before he will be assigned to an AO billet.<sup>10</sup>

## TRAINING

There are two courses of instruction that a new FAC will receive. First, he will receive flight qualification training on the aircraft that he will fly while performing his FAC duties. Second, he will attend either the Marine Corps' Landing Force Tactical Air Control Party Course or the Air Force's Battle Staff Course. Frequently, Marine FACs will also attend the Air Forces' Joint Firepower Control Course.<sup>11</sup>

Since AOs must have previously served as a FAC, they would normally not require any additional training.

## PROBLEMS

Most officers selected for FAC duty would prefer to remain flying their primary aircraft. They believe that additional flight time and leadership experience in an aviation unit is both more personally and professionally rewarding.

Officers assigned to AO billets object to not being able to fly. My interviews indicate this sentiment is particularly strong in the battalion positions.

Battalion FAC and AO assignments are normally for a twelve month tour. Several former infantry battalion commanders opined that the AO tour needs to be eighteen months to enable the AO to be present during the entire training period. However, they understand that the twelve month tour is driven by aircraft proficiency and currency directives. Most aviators perceive that those officers that serve as AO/FACs do not receive career incentives such as higher promotion rates, higher school selection, or assignment preference. This is another reason why they do not seek these assignments.

## CONCLUSIONS

The Marine Corps' air-ground interface system is highly effective for several reasons. First, they are organized into true combined arms organizations. All assets needed to fight effectively are under one commander. This unity of command facilitates focusing all efforts for the common objective.

Secondly, they are organized in peace as they will be organized in war. Consequently, they train in peace as they will fight in war. They do not have "round-out" or "round-up" units that will join the division on the battlefield.

Third, the assignment of all personnel serving in the Marine Air Command and Control System to billets on the ground commander's authorization document, promotes loyalty to the unit and facilitates building cohesion and combat effectiveness.

Lastly, based on our review of the Marine Air Command and Control System, it is apparent that it is very well staffed and equipped with communication gear, vehicles and other items required to perform the needed functions. Good people, well equipped and well trained, will be successful on the battlefield.

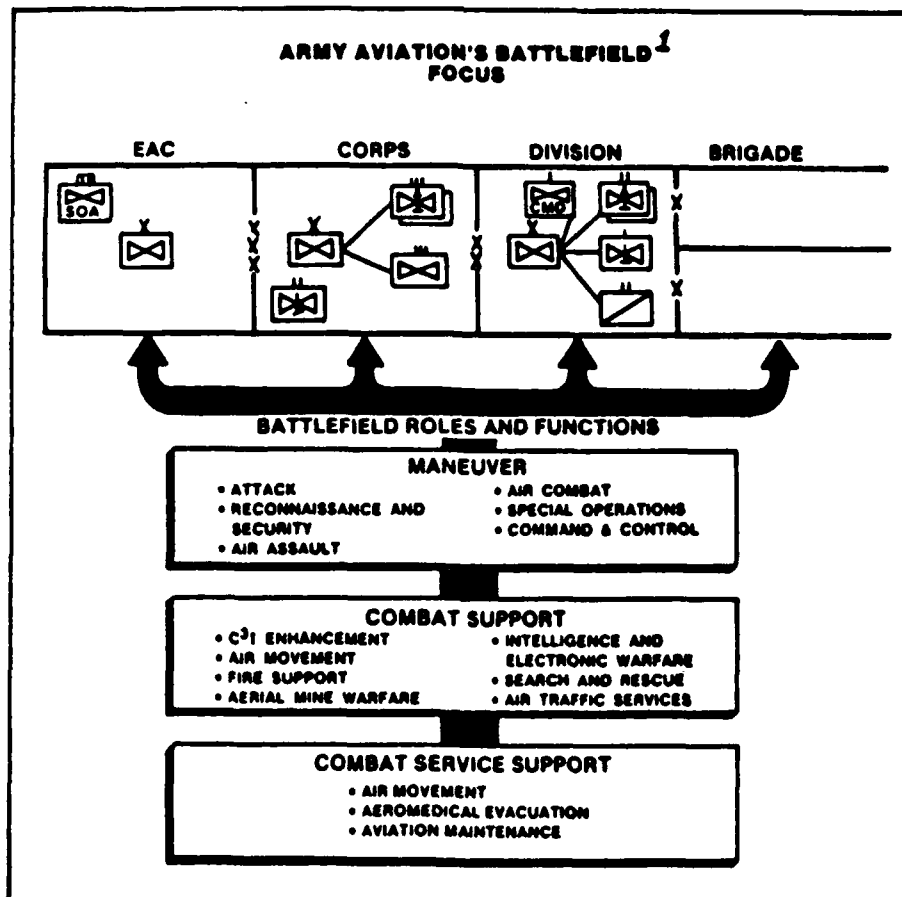
## ENDNOTES

1. U. S. Marine Corps, Fleet Marine Field Manual 5-1, p. 1 (hereafter referred to as "FMFM 5-1").
2. U. S. Department of the Army, TC 90-7, p. 45.
3. FMFM 5-1, pp. 47-55.
4. Ibid.
5. U. S. Air Force, Air Ground Operations School, "Marine Air Command and Control System" - Advance Sheet, p. 4.
6. Ibid. pp. 12-13.
7. Ibid. p. 4.
8. U. S. Marine Corps, Table of Organization 1076M, lines 22, 24, 72-74.
9. U. S. Marine Corps, Table of Organization 1037G, lines 20, 24-25, 72-79,
10. Interview with Paul Davenport, COL, Senior Marine Corps Representative to the U. S. Army War College, Carlisle, PA, 26 March 1989.
11. Ibid.

# ARMY AIR-GROUND INTEGRATION AT THE LOWER TACTICAL LEVELS

## CHAPTER VI

Chapter II addressed the development of Army Aviation and the tremendous expansion of capabilities. In Chapter III, I examined the operational level commander's responsibilities for command and control of all aviation assets and the allocation of those resources to his subordinates. Figure 6-1, extracted from FM 1-100, "Doctrinal Principles for Army Aviation in Combat Operations", shows Army Aviation's battlefield focus and translates it into specific roles and functions that span both the operational and tactical levels of war.





Additionally, it lists the specific functions that Army Aviation can perform in the maneuver, combat support and combat service support roles. Chapter VI, examines the current system of air-ground interface that is employed to execute those functions and identifies problems and draws conclusions about how well the system works.

### AIR-GROUND INTERFACE SYSTEM

Army Aviation has made major organizational changes over the past four years. The most significant systemic change was the consolidation of all divisional aviation assets into an aviation brigade. This change, under the Army of Excellence, was designed to achieve better utilization of aviation in the division and better maintenance management of all aviation assets. The brigade consists of the cavalry squadron, the combat support aviation battalion, two helicopter battalions, and the headquarters and headquarters company. The S-3 section of the Table of Organization and Equipment (TO&E) initially authorized three liaison officers (Captains), to perform the interface with supported elements. However, on 25 February 1986, the Army's Training and Doctrine Command (TRADOC) sent a message, "TRADOC Scrub of Aviation HQ Elements", to the Commander, United States Army Aviation Center, that directed the deletion of all three liaison officer billets on aviation brigade TO&Es.<sup>2</sup> This placed the burden for achieving the necessary interface with supported elements on the unit commanders, S-3 officers, and pilots taken "out-of-hide-".

Current Modified Tables of Organization and Equipment (MTO&E) do not authorize liaison officers with the exception of the AH-64 Attack Helicopter Battalion (013855LFC61) which authorizes one liaison officer-a lieutenant.<sup>3</sup> Such a junior officer is not likely to have the knowledge and experience required to perform liaison duties.

Although the maneuver brigade commander has airspace command and control responsibilities, the system does not support him with a formal A2C2 element on his MTO&E. The brigade staff is expected to perform those duties by extracting the required information from the air defense artillery liaison officer, the fire support officer, the Air Force ALO, and the S-3 air, in the absence of an Army Aviation liaison officer.<sup>4</sup> When available, the Army Aviation liaison officer (AALO) would perform the functions indicated on the "Brigade A2C2 Lateral Information Networking" chart extracted from FM 100-103.<sup>5</sup> (See page 52). The S-3 air is tasked to perform those duties in the absence of the AALO. However, since the S-3 air billet is not filled by an aviator, it is highly unlikely that he could satisfactorily perform those critical duties - particularly in combat. In acknowledgement of this requirement, FM 1-100, "Army Aviation in Combat Operations" states:<sup>6</sup>

"Liaison Officers and S3-/G3-air officers must know aviation force structure, operational tactics, weapon systems capabilities, aviation maneuver employment, and sustainment requirements.

These officers must continuously conceptualize how aviation can influence combat action and help other combat arms to achieve greater combat effectiveness. To provide this expertise, the brigade and division S3-/G3-air officers "should" be aviation officers.

However, FM 1-100 was just published in February, 1989 and TO&Es have not been amended to "require" an aviator as the S-3 air.

BRIGADE A²C¹ LATERAL INFORMATION NETWORKING 7					
INFORMATION ITEMS	BRIGADE STAFF ELEMENTS				
	ADA Liaison Officer	Army Aviation Officer	Fire Support Officer	Av Liaison Officer	S3/G3 Air
OPORDS/OPPLANS (includes A²C¹ annex)	X	X	X	X	X
ATO/airspace control order	X	X	X	X	X
Airspace control issuing times				X	X
Airspace user priorities		X			X
A²C¹ restrictions/control measures (current and requested)	X	X		X	X
Army AD priorities	X			X	X
AD warnings	X			X	X
AD weapon control status (current and requested)	X	X		X	X
Friendly ADA locations and coverage	X	X		X	X
ADA weapon engagement zones	X			X	X
FABPs		X			X
Location and status of airfields (includes FABPs)	X	X		X	X
Field artillery locations	X	X	X	X	X
Fire support coordination measures		X	X	X	X
Significant planned/ongoing fires (includes no fires in rear areas)		X	X	X	X
Army aviation airspace requirements (includes S&BA)		X		X	
Army aviation unit locations (company and larger)		X			X
Aviation battle positions		X	X		X
Washed enemy aircraft locations		X			X
IFF/SIF procedures	X	X		X	
SAAFBs	X	X			
BPV flight paths/routes		X	X		
BPV launch sites		X	X		
Flight obstructions		X			X
Sortie allocation					X
FIST	X	X	X	X	X
Positions of instrument landing systems		X		X	
Location and status of RAVAIAs		X		X	
Intelligence summaries					X
Air support requests/requirements (includes S&BA and BPV)	X	X	X	X	X
Air support requests/requirements (includes Air Force only)	X		X		X
RDC contaminated areas		X			X
Unscheduled large formation missions					X
Airborne tactical formations	X				X
Friendly ECM activities		X			X
Location of FCCs		X		X	
Location of FDCs		X		X	

Figure 6-2

Since MTO&E positions are not authorized for LNO's, but aviation commanders realize their importance to air-ground interface and combat effectiveness, most commanders designate an LNO on a mission-by-mission basis. Usually, this person is the Air Mission Commander (AMC) who will execute the mission. However, by the time the AMC is involved, the scheme of maneuver has been finalized and he can have only a slight influence on how the mission will be executed. This is contrary to the combined arms team concept which indicates aviation involvement early in the planning process.

There are two additional positions that are key to the Army-Air Force interface system. They are the Ground Liaison Officer (GLO) and the Air Reconnaissance Liaison Officer (ARLO). Both of these positions are filled by Army Officers. The Army-Air Force Interservice Support Agreement, discussed in Chapter IV, provides common guidance for their assignment, duties, and support. The GLO and ARLOs are assigned to the Air Force unit staff that is tasked to provide support. They will perform the following common duties:<sup>8</sup>

1. Advise and assist the Tactical Air Commander.
2. Keep the Air Force informed of the tactical ground situation.
3. Assist the briefing and debriefing of aircrews.
4. Keep land forces informed.
5. Provide daily interface with TAC/MAC agencies in the area of training, standardization, and tactics.
6. Assist with the development of plans and orders.
7. Represent the Army to the Air Force.

The GLO will:<sup>9</sup>

1. Advise air commanders on Army organizations, operations, tactics, and equipment.
2. Assist with base defense plans.
3. Assist with planning joint training exercises.
4. Function as the ground commander's representative in the Battlefield Coordination Element (BCE).
5. Review and assist ground elements with all air support.

The ARLO will:<sup>10</sup>

1. Represent the Army's reconnaissance requirements to the Air Force.
2. Assist in the development of reconnaissance taskings.

Although the Air Force desires that both the GLO and ARLOs have an aviation background, it is not specifically required.

The primary missions of the liaison officer are to provide timely and accurate aviation advise to the ground commander and his staff and to coordinate all Army Aviation related activities. He must accomplish these missions in a manner that will facilitate the ground commander's tactical plan. The following are the primary duties of the Army Aviation liaison officer:<sup>11</sup>

1. Advise the supported force commander on all matters concerning the employment of aviation assets.
2. Recommend to the ground commander appropriate courses of action and assets in combined arms operations to ensure that maneuver planning and synchronization are integrated during execution.
3. Advise the supported force commander of current missions and planned allocations of aviation resources.

4. Maintain availability and status of the number and type of operational aircraft for the supported commander.
5. Advise the aviation force of all requested and projected missions.
6. Resolve questions or problem areas that arise concerning aviation resources, to include technical and tactical situations.
7. Coordinate with the force A2C2 element on the status of aviation tactical operations, the location and status of friendly aviation assets, and all other information that affects the use of airspace.
8. Establish and maintain communications with the supporting aviation unit.
9. Ensure intelligence and fire support requirements are coordinated and synchronized with supported unit.

### SELECTION CRITERIA

The criteria for selection of GLOs is that they must be a graduate of the Command and General Staff College or other service equivalent and must be airborne qualified if assigned to a Tactical Air Command/Military Airlift Command numbered air force or airlift wing. If they are to work with Special Operations Forces (SOF), they must also be military free-fall qualified. They are required to be physically qualified for flight or airborne operations if duties dictate.<sup>12</sup>

In order to be selected as an ARLO, a Military Intelligence background is required. Both the GLO and ARLO positions require

good communicative skills and a high degree of professional knowledge, ability, and potential.<sup>13</sup>

When Army aviation liaison officers have been authorized in the past, the local aviation commander has made the selection. He has sought to select an experienced aviator that has been in the unit long enough to know the unit's standard operating procedures and the area of operation. Additionally, he will select someone who will be able to represent Army Aviation properly as he interfaces with the ground commander and his staff.

### TRAINING

Currently, no special training is provided by the U. S. Army Aviation Center (USAAVNC) that is designed specifically for officers selected to serve as AALOs. However, the programs of instruction in the Aviation Basic and Advanced Officers Courses are designed to broaden the officer's knowledge and understanding of the capabilities/limitations of all types of Army aviation support and the tactics and techniques of their employment. This is an effort to build the officer's knowledge beyond that relevant to the particular aircraft in which he is qualified: ie. attack, cavalry, assault, cargo, special electronic mission aircraft. However, these courses do not provide flight training.

The GLO and ARLO receive whatever training is required for them to perform their duties with the Air Force. Usually, they will

attend the Battle Staff Course and/or the Joint Firepower Control Course at AGOS. If a GLO will be working with Military Airlift Command, he will attend the Air Transportability Course and Airlift Operations School.<sup>14</sup>

### PROBLEMS/CONCLUSIONS

When the U. S. Army began consolidating the divisional aviation assets into an aviation brigade, the aviation section was taken from the maneuver brigade commander. Not only did we take his few aircraft that provided immediate response to his daily general support aviation needs, but he also lost his aviation expert that performed all of the aviation liaison functions previously addressed. The plan was to have three liaison officers on the aviation brigade staff that would perform those functions. Unfortunately, when those billets were eliminated, it was the maneuver brigade commander, his staff and subordinate commanders that lost. Even though most aviation brigade, battalion, and company commanders strive to personally fill the void, they are unable to do so because of requirements necessitated by their own command. The liaison mission is a full-time job. A "catch-as catch-can" liaison officer that only goes to the supported unit when he receives a mission tasking, will not meet the requirement. Nor can a non-aviator be trained to perform all duties required to interface with both the Air Force and Army Aviation. Aviation experience is necessary to



understand the impact of certain actions and provides credibility with the ground unit.

The solution to the problem is the development of a comprehensive Army-Army Aviation interface system that can function in an effective manner, on a continuous basis, and will build the true combined arms team required for success on the battlefield. In Chapter VII, I will propose a system that will achieve that extremely important goal.

## ENDNOTES

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2. U. S. Army Training and Doctrine Command, "TRADOC Scrub of Aviation HQ Elements", message \*R 2519555Z FEB 86.
3. U. S. Army Forces Command, "MTOE 01385LFC61, Attack Helicopter Battalion (AATT-64), 13 January 1987, p. 1.
4. U. S. Department of the Army, FM100-103, p. 5-16.
5. Ibid. pp. 5-16 thru 5-17.
6. FM 1-100, p.3-9.
7. "Army-Air Force Memo of Agreement-ALO, GLO, ARLO", pp. 2-3.
8. Ibid.
9. Ibid.
10. Ibid.
11. FM 1-100, p. 3-9 thru 3-10.
12. U. S. Air Forces, Air Ground Operations School (AGOS) Ground Liaison Officer/Air Reconnaissance Liaison Officer-Advance Sheet, p. 2.
13. Ibid.
14. Ibid.

## RECOMMENDATIONS FOR ARMY AIR-GROUND INTEGRATION

### CHAPTER VII

Previously, I addressed the historical development of aviation warfare in the United States with particular attention focused on Army Aviation. We discussed the tremendous expansion of missions and functions that Army Aviation has been able to perform. Those missions and functions translate into aviation essential tasks that must be able to be executed by Army Aviation in concert with the ground element and through the air-ground interface system. FM 1-100, "Doctrinal Principles for Army Aviation in Combat Operations", lists the following essential tasks.<sup>1</sup>

1. Performing near-simultaneous maneuver, CS, and CSS roles and functions throughout the close, deep, and rear operations.
2. Fighting across the full spectrum of conflict under varying battlefield conditions to protect national interests.
3. Conducting combat operations with joint, multinational, and host-nation forces.
4. Providing decisive mobility and intelligence on the battlefield.

5. Providing agile aerial reserve forces to seize the initiative and to mount offensive operations.
6. Providing flexibility that allows combined arms, joint, and combined operations to quickly adapt to developing situations and rapidly changing battlefield conditions.
7. Providing around-the-clock capability to meet combined arms mission requirements for operations during limited illumination (night) and marginal weather.
8. Conducting air combat to strengthen joint counter-air and tactical air defense.

Nearly all of these tasks are able to be accomplished based upon the inherent characteristics of the helicopter which provide speed, mobility, flexibility, and firepower. The following chart extracted from the 1977 version of FM 100-5 attests to the speed and mobility impact the helicopter provided at that time.

#### HELICOPTER IMPACT<sup>2</sup>

<b>INFANTRY SQUAD</b>	<b>TIME TO COVER 30 Km</b>	<b>DISTANCE COVERED IN 1 HOUR</b>
<b>WALKING</b>	<b>5 HOURS</b>	<b>6 Km</b>
<b>APC</b>	<b>2 HOURS</b>	<b>15 Km</b>
<b>AIRMOBILE</b>	<b>15 MINUTES</b>	<b>120 Km</b>
Today, heliborne infantry can move about the battlefield 20 times as fast as foot-mobile troops, and 8 times as fast as mechanized forces.		

Figure 7-1

With the addition of the UH-60 Blackhawk and CH-47D Chinook, in the mid-1980's, mobility, speed, and flexibility were enhanced exponentially. Furthermore, following the addition of the AH-1 Cobra, FM 100-5 stated, "Attack helicopter units provide a ground commander an aerial antitank force with a day and night mobility differential 10 to 20 times greater than armored reserves."<sup>3</sup> The increased speed, agility and enhanced firepower of the replacement AH-64 Apache makes the contribution even more dramatic.

Army Aviation now boasts an inventory of over 9,000 aircraft capable of performing the missions, functions, and tasks previously listed.<sup>4</sup> Therefore, it is imperative that we have a system of air-ground interface that can ensure that the maximum combat power is generated by those assets. In this chapter, I will recommend changes to the Army's current air-ground interface system that will achieve that important objective.

### AIR-GROUND INTERFACE SYSTEM

When the S-3 Air position was first established in 1959, as a member of the Infantry Battle Group, his mission was to "coordinate the employment of close air support with the battle group ground operations".<sup>5</sup> He, also, was responsible for coordinating air movement of his unit. In 1959, he worked exclusively with the Air Force since they provided both CAS and air transport and Army Aviation was still in its infancy. However,

even though Army ground elements now receive much of their support from Army Aviation, in addition to the Air Force, the system has not been enhanced to accommodate the requirements for additional air-ground interface

The first systemic change that should be directed to improve the utilization of Army Aviation assets is the establishment of the S-3/G-3 Air billet at battalion, brigade, and division as "requiring" an aviator (specialty 15). As previously mentioned, the new Army Aviation capstone manual, FM 1-100, states that it "should" be an aviator. It will be tough to sell this recommendation to both infantry and armor branches unless they receive another assistant S-3 billet since that is how they primarily use their S-3 air officers. Whether they need an additional assistant S-3 is a different issue, but it is certain that the S-3 air has a major role to play on the ground unit's staff and should be allowed to perform those duties. It may be more appropriate to change the job title to "Army Aviation Liaison Officer (AALO).

The tour of duty for the S-3/AALO should be for at least twelve months and not more than eighteen. A twelve month tour provides sufficient time for the officer to become familiar with the key personnel, understand unit procedures, establish credibility, and develop proficiency at his LNO duties. The experience gained from serving in this capacity is so valuable that as many officers as feasible should be afforded the opportunity to serve as an S-3 air/AALO. An eighteen month tour should be the maximum. As Colonel (now BG) Robert Frix stated in Aviation Digest, "We should

constantly educate people in the combined arms team who we are going to be working with. They have to understand us and we have to understand them."<sup>6</sup> His point becomes even more important as we continue to lose aviation officers to retirement who have leadership and staff experience with the other combat arms. Our lieutenants are assessed directly into aviation branch, as it should be, but we must take steps to educate them and develop their appreciation for combined arms combat so that they can employ their aviation units in a manner that maximizes combat effectiveness.

The requirements for aviation coordination and management indicate the need for an E-7 and an E-4 flight operations specialists at the battalion and brigade level, and an E-8 at the division level. Both peacetime and wartime demands would justify these additions to the TO&E. Additionally, the S-3/AALO Air section should have a vehicle equipped with FM and VHF/UHF radios, similar to that provided to the Air Force's TACP, so that he can have the mobility and communication capability to do the job. This billet should also be an operational flying position. This will afford the opportunity to continue to build his flying skills while performing his AALO duties. The flying billet would serve as an enticement for the assignment.

One additional systemic change should be implemented. The TRADOC directive that deleted the aviation liaison officers from the aviation brigade's TO&E should be rescinded. The aviation demands of all the other branches dictate that the aviation brigade be capable of providing liaison officers frequently. The primary users

would be the artillery, engineers, military police, and all the DISCOM logistical units. Two liaison officers in the S-3 section would be able to meet the other branches' requirements which would often have a major impact on the infantry/armor unit's combat power.

### MISSIONS

The missions and tasks to be performed by the S-3 Air/AALO have been discussed in previous chapters; however, I will expand slightly on a few of them. First, the AALO will provide advice not only to the ground commander, but also, to the aviation commander. He will keep the aviation commander advised of future mission requirements and provide him with after-action-reports on all aviation missions so that support can be improved.

Secondly, the AALO will serve as the unit's airspace command and control officer. He will coordinate/deconflict the requirements of all airspace users including indirect fire systems. In this regard, he will also coordinate with the air traffic control agency in his area to ensure that required navigational aids and control procedures are able to support planned operations.

Another task the AALO should perform is to plan and coordinate all unit aviation training. A good aviation training program will facilitate safe and effective aviation operations in peacetime and war.

Lastly, the S-3 Air/AALO must be capable of controlling close air support missions - both Air Force and Army. It is likely that



other demands for Air Force aviators will reduce the possibility of FACs being available at the lower tactical levels. Consequently, the AALO must be able to accomplish the mission.

### SELECTION CRITERIA

Before an officer is selected to perform S-3 Air or aviation liaison duties, there are five criteria that he should meet. First, he must have completed at least a two year aviation utilization assignment. Not only will this have enabled him to develop his flying skills and understanding of aviation employment, he will also have had the opportunity to gain some leadership experience as a platoon leader and possibly staff experience at the company or battalion level.

Second, he must have completed the advanced course because he will have received much valuable tactical training that will ensure his success as an AALO.

Third, he should have commanded an aviation company so that he can gain an understanding of the leadership responsibilities of command and experience in how to employ an aviation unit.

Next, those selected to be an AALO should possess outstanding verbal and written communicative skills. As an AALO, his credibility and effectiveness will be determined by how effectively he is able to communicate his advise to the commander and staff.

Lastly, due to the importance of the S-3/AALO duties for by the ground and aviation elements, it is imperative that we select our best officers based upon demonstrated outstanding duty performance. We should select those officers we expect to be our future S-3s, executive officers and commanders. The experience they will gain from serving with an infantry or armor unit as an AALO will be invaluable and enhance their duty performance as aviation leaders.

Major General Ellis D. Parker, the Chief of Army Aviation Branch, expressed his opinion on the role of aviation liaison officers in the December, 1986, issue of Aviation Digest. He said, "I cannot overemphasize the absolute importance of liaison officers. The longer I watch us perform, the higher the value I place on them."<sup>7</sup> General Parker cited a personal example of what he did to reverse the negative perception of the quality of aviation support his unit had provided to an infantry division. The only thing he did differently was to send the division commander the brightest promotable captain he had to act as his Army Aviation liaison officer. Within a short time the division commander expressed his extreme satisfaction with his aviation support.<sup>8</sup>

### TRAINING

Army Aviation does not have a training program to prepare those selected to serve as ALOs. However, the importance of this mission dictates that we establish such a program. There should be two phases of training. The first phase should be conducted at

the U. S. Army Aviation Center (USAAVNC), Fort Rucker, Alabama, and the second phase should be conducted at the Air Ground Operations School (AGOS), Hurlbert Field, Florida.

In phase one, the objective should be to expand upon the officers' current knowledge of Army aviation. Specifically, every officer will arrive with considerable training and experience in one category of Army aviation such as attack, cargo, assault, air cavalry, and SEMA. However, his knowledge and experience in the other categories will be very limited. Through academic instruction oriented on tactical employment practical exercises and sufficient orientation flights in the other aircraft, he should emerge proficient and confident in his ability to advise the ground commander on how Army aviation can help him achieve his objectives. Academics alone cannot achieve the desired proficiency. Some hands-on-time must be provided.

In phase two, the officer will go to AGOS where he will receive two courses. First, he will attend the Battle Staff Course (3 weeks) which will provide him "an understanding of the tactical battle management functions within the Tactical Air Control System/Army Air Ground System (TACS/AAGS) and the principles of exploiting Air Force and Army capabilities in the air land battle."<sup>9</sup> The course covers the threat, tactical air and ground force employment concepts and tactics; weapon system effectiveness; tactical command and control; the integration of air and surface forces for effective joint operations; elements of tactical C3CM strategy; and intelligence systems and support

procedures."<sup>10</sup> Upon completion, officers are awarded the additional skill identifier 5 U (Air Operations Officer).<sup>11</sup>

The other AGOS course he should attend is the Joint Firepower Control Course. It is a one week course designed to "teach jointly approved procedures and techniques used to plan, request, coordinate, and control joint firepower." Emphasis is placed on the tactical level of war.<sup>12</sup>

An officer who successfully completes the USAAVNC and AGOS phases would be fully prepared to perform Army Aviation liaison functions in any ground unit.

## ENDNOTES

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2. FM 100-5, (1977 Edition), p. 2-11.
3. Ibid., p. 2-30.
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5. U. S. Department of the Army, Field Manual 7-40, p. 19 (hereafter referred to as "FM 7-40").
6. Rudolph Ostovich III, "Air Land Battle - Part II: Views from Aviation Commanders," Aviation Digest, December 1986, p. 33.
7. Ibid. p. 36.
8. Ibid.
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10. Ibid.
11. Ibid., p. 11.
12. Ibid., p. 18.

## CONCLUSION

### CHAPTER VIII

Army Aviation has developed into a major combat force that must be well integrated into the ground commander's tactical plans if the maximum combat effectiveness is to be achieved. Air cavalry, attack, cargo and assault helicopters, as well as special mission aircraft, all have an important role to play on future battlefields. Our technological advances have continued to enhance their capabilities to perform more missions with increasing effectiveness. However, unless we have a satisfactory system that selects and trains quality people in how to integrate aviation into the ground tactical plan, we will not achieve maximum combat power. We will often fail to take advantage of those windows of opportunity that will enable us to get inside the enemy's decision-making cycle and gain the initiative.

As Major General Parker stated,

"Our liaison officers must be the smartest people in the tactical operations center - conceptualizing 72 hours out in front of most others in the center, thinking about how aviation can influence the combat action and help the other combat arms to achieve full combat effectiveness in the best possible way."<sup>1</sup>

This goal cannot be achieved unless the Army's senior leadership makes appropriate force structure changes that will facilitate the performance of the combined arms team.

#### ENDNOTES

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